

## 515A



### 515A Portable Calibrator

Precision, portable, 4-1/2 digit calibration and 5-1/2 digit verification where you need it  
 Battery powered when disconnected from line power  
 Lightweight and small size

The Model 515A Portable Calibrator is a precision voltage and resistance calibration source for on-site calibration of measuring instruments. The 515A provides direct and alternating voltage and resistance standards in a unit only 3-1/2 inches high by 8-1/2 inches wide by 16 inches deep. The instrument weighs just 13 pounds, including the rechargeable battery pack, which eliminates warm-up delays after transit and allows 8-hour operation free of line power for true portability. The 515A's basic uncertainty is specified over a temperature range of 18°C to 28°C for a 1-year period, thus making it easy to use in production test and calibration environments without complex correction terms. The long calibration cycle also makes the 515A economical to own by minimizing maintenance overhead costs.

All 515A outputs are available at a single set of output terminals. In addition, terminals are available to allow guarding and shielding of test leads in critical test situations.

If the unit is connected to the ac line, the internal battery is placed on charge; otherwise the 515A automatically operates from the battery and its state of charge is indicated on the meter to the right of the panel.

The 515A can be used effectively to test a wide range of characteristics in measuring instruments.

Here are a few of the many applications:

**dV:** Input offset current, a/d linearity, absolute accuracy

**aV:** Frequency response, converter linearity, residual noise, absolute accuracy

**Resistance:** Linearity, residual resistance, absolute accuracy

**General:** Zero offset and stability, autoranging, overranging

### Specifications

#### Technical Specifications

##### Direct Voltage Ranges

$\mu$ V: 0 to 99  $\mu$ V continuous (0.2  $\mu$ V resolution)

1V: 0 to 1.0V in 0.1V steps

10V: 0 to 10V in 1V steps

100V: 100V cardinal point

**Accuracy:** (For 1 year, 18°C to 28°C, 30 min warm-up)

$\mu$ V range:  $\pm 2 \mu$ V

1V, 10V, and 100V ranges:  $\pm 30$  ppm or 30  $\mu$ V of range, whichever is greater

**Output Current:** Function of source resistance, except 100V range which is limited at approximately 0.5 mA. No damage to instrument with short circuit on output.

##### Source Resistance

$\mu$ V, 1V, 10V ranges: 300 $\Omega$

100V range:  $< 1\Omega$  (up to 0.5 mA load)

##### Alternating Voltage

Range: 1V, 10V, 100V cardinal points

##### Output Frequencies

10V: 400 Hz, 4 kHz, 50 kHz

1V, 100V: 400 Hz

**Accuracy:** (For 1 year, 18°C to 28°C, 30 min warm-up)

1V:  $\pm 0.05\%$

10V:  $\pm 0.04\%$  at 400 Hz and 4 kHz.  $\pm 0.1\%$  at 50 kHz

100V:  $\pm 0.06\%$

**Frequency Accuracy:**  $\pm 1\%$  except at 50 kHz  $\pm 5\%$

**Total Harmonic Distortion and Noise:**  $< 0.03\%$  (400 Hz and 4 kHz),  $< 0.05\%$  (50 kHz)

##### Output Current

1V, 10V output: 0 to 10 mA rms

100V output: 0 to 0.5 mA rms

##### Resistance

Range: 10 $\Omega$  through 10 M $\Omega$  in decade steps zero setting

**Accuracy:** (1 year, 18°C to 28°C, referred to "0 $\Omega$ " position)

0 $\Omega$  - Residual resistance is less than 0.15 $\Omega$

10 $\Omega$  - 100 $\Omega$ :  $\pm 0.06\%$

1 k $\Omega$  - 1 M $\Omega$ :  $\pm 0.015\%$

10 M $\Omega$ :  $\pm 0.075\%$

**Power Rating:** 0.2W or 100V (dc or rms), whichever is less

### General Specifications

**Temperature:** 0°C to 50°C, operating

**Power:** 100, 115, 200, 230V ac,  $\pm 10\%$ , 50 to 440 Hz,  $< 10$ W, or internal batteries. Eight hour operation from batteries when fully charged

**Weight:** 5.9 kg (13 lb)

**Size:** 8.9 cm H x 21.6 cm W x 40.6 cm D (3.5 in H x 8.5 in W x 16 in D)

**Included:** Manual, power cord, batteries, serialized and dated calibration certificate

### Ordering Information

#### Model

515A Calibrator

#### Accessories

M03-200-618 3" Rack Adapter, Dual

M03-200-619 3" Rack Adapter, Single, Offset

M03-200-620 Panel Mounting Kit

M03-203-700 Panel Protector